

QUESTION

- **How do archivists identify and capture records?**

AUTOMATED SYSTEMS MEETING THE CHALLENGE

- **Critical Skill Set: Information System Analysis and Design Skills**
- **Being able to create conceptual models for representing records, documentation and system requirements**

WHAT IS CONCEPTUAL OR LOGICAL MODELING?

- **Conceptual models show what a system does or must do. They are implementation-independent models; that is, they depict the system independent of any technical implementation.**

CONCEPTUAL MODELS

- **Why use conceptual models?**
- **1) Employing conceptual models is a more effective strategy for analyzing systems where physically reviewing records or browsing the system is not a realistic alternative**
- **2) Modeling techniques are well documented and tested**

Models and Information Systems

- **Models:**
 - Conceptual/logical/physical representations
 - For the purpose of analysis, design, construction
- **Data Models:** focus on things and facts
- **Process Models:** focus on information-oriented activities
- **Object Models:** focus on things and their behaviors
- **Business Models:** context for business activities

DATA MODELING

- Defined as a technique for organizing and documenting a system's data
- The actual model is frequently called an entity relationship diagram because it depicts data in terms of the entities and relationships described by the data

Data Models

- Items of business interest - facts about them
 - Entities: items of interest
 - Relationships: between entities
 - Attributes: facts about items of interest
- Relatively static representation of content
- Oriented to database design

Process Models

- Activities or functions – defined in terms of data capture, storage, or distribution.
- Data flow diagrams
 - Data flow: data in motion
 - Data store: data at rest
 - Process: data manipulation, transformation, decision-making
 - Source/sink: origin or destination of data
- Oriented to software analysis and design

Object Models

- Items of business interest - their behaviors
- Basic elements of object-oriented models
 - Object: class (general) and instance (specific)
 - Attributes (variables): data about an object
 - Operations (methods): behaviors of an object

BUSINESS PROCESS MODELS

Prominent types of Models include:

- Business process decomposition descriptions or diagrams
- Business process data flow models

FUNCTIONAL DECOMPOSITION

- **An iterative process of breaking a system into its component subsystems, processes, and subprocesses. Each level of abstraction reveals more detail about the overall system or a subset of that system**

PROCESS MODELING

- **A technique for graphically representing the functions and processes, which capture, manipulate, store and distribute data [or records] between a system and its environment and between components within a system**

BUSINESS PROCESS MODELS

- **Most common technique is called Modern Structured Analysis, which is:**
- **A process-centered technique that is used to model business requirements for a system. The models are structured pictures that illustrate processes, inputs, outputs, and files required to respond to business events.**

BUSINESS PROCESS DATA FLOW MODELS

- **In structured analysis, the primary deliverables from process modeling are a set of coherent, inter-related data flow diagrams**
- **A data flow diagram is a tool that depicts the flow of data through a system and the work or processing performed by the system**
- **Data flow models can be used to effectively depict business processes, inputs, and outputs, and the relationships and interaction between them.**

PROCESS

- **Work performed on, or in response to, incoming data flows or conditions**
- **A synonym is TRANSFORM**

BUSINESS PROCESSES

- **Business Functions are transformed by processes, which can be decomposed into:**
 - **BUSINESS EVENTS OR TRANSACTIONS**
 - **ELEMENTARY PROCESSES**

BUSINESS FUNCTIONS

- **Functions group the logically related activities and tasks**
- **A function is a set of related and ongoing activities of the business**
- **A function has no start or end; it just continuously performs the work as needed**
- **Functions are decomposed into subfunctions and eventually into discrete business processes that perform specific tasks**

BUSINESS FUNCTIONS

- **An example of a function and sub-functions from the business area of the Office of the Registrar include:**
- **Function: Student Recordkeeping**
- **Subfunctions: Official Student Record Maintenance, Student Degree Recording, Semester Data Maintenance, and Student Grades and Credit Maintenance.**

BUSINESS EVENT OR TRANSACTION

- A business event is “something that ‘happens,’ and that causes business data to change.”
- An event is a logical unit of work that must be completed as a whole. An event is triggered by a discrete input and is completed when the process has responded with appropriate outputs.

BUSINESS EVENT OR TRANSACTION

- There are two basic types of inputs that will trigger a business event or transaction: an **external event** that is initiated by agents outside the system being reviewed, and a **temporal event** that is triggered by the arrival of a predetermined point in time

BUSINESS EVENT OR TRANSACTION

- **Most events or transactions are represented by a single process, although occasionally, the event may include two or three processes. An event process or transaction is described in a single sentence that identifies the individual or agency initiating the action (subject-phrase); the official action (verb-phrase); and the individuals or objects acted upon or interacted with (object-phrases).**

BUSINESS EVENT OR TRANSACTION

- **Examples of event processes or transactions taken from the Office of the Registrar work area include: For Subfunction: Student grades and credit maintenance, the event processes or transactions include: 1) Post grades for students upon completion of course work (Input: grade roster from faculty member, and Output: Create a grade and credit record); 2) Assign credit for student work done at other academic institutions (Input: Record of work completed at another institution, and Outputs: Create a credit articulation or evaluation report, and modify student record to reflect the decision).**

ELEMENTARY PROCESSES

- Defined as “discrete, detailed activities or tasks required to complete the response to an event.” In other words, elementary processes are the outputs generated by the business event. Types of elementary processes include: creating a new occurrence of an entity (add), updating an occurrence of an entity (change or modify), and deleting an occurrence of an entity. The methodology omits any processes that do nothing more than move or route data, thus leaving the record unchanged.

ELEMENTARY PROCESSES

- Elementary processes are named with a strong action verb followed by an object clause that describes the work being performed.
- Examples of elementary processes from the Financial Aid work area include: Create report listing federal aid recipients with unsatisfactory academic progress, record appeal information in student’s financial aid record, complete work-study verification form received from employer, and provide certification information to the lender.

WHERE ARE RECORDS CREATED?

- Record creation occurs at the business event or transaction level
- The actual records to be analyzed are those documents received as inputs to the system and those created as a result of the outputs or elementary processes generated in response to the event

DATA FLOW DIAGRAMS – SYMBOLS

- Data Flow: Data in Motion – Data moving from one place in a system to another
- Data Store: Data at Rest – A data store may represent one of many physical locations for data, e.g., a file folder, a computer-based file
- Process: Work or actions performed on data so that they are transformed, stored or distributed
- Source or Sink: Origin or destination of data – Sources or sinks are sometimes referred to as External Entities because they occur outside the system